

REFERENCE WAFER AND PROCESS FOR MANUFACTURING SAME

ABSTRACT

5 An apparatus and method for manufacturing and using a calibrated registration
reference wafer in a semiconductor manufacturing facility. A reference reticle consisting of
a 2-dimensional array of standard alignment attributes is exposed several times onto a
photoresist coated semiconductor wafer using a photolithographic exposure tool. After the
final steps of the lithographic development process the resist patterned wafer is physically
10 etched using standard techniques to create a permanent record of the alignment attribute
exposure pattern. The permanently recorded alignment attributes are measured for placement
error using a conventional overlay metrology tool. The resulting overlay error data is used to
generate a calibration file that contains the positions of the alignment attributes on the
reference wafer. The reference wafer and calibration file can be used to determine the wafer
15 stage registration performance for any photolithographic exposure tool.

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